AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A computer program product, tangibly embodied on a machine-readable storage device, the computer program product comprising instructions operable to cause data processing apparatus to perform operations comprising:

displaying a user interface in a client program, the user interface having a plurality of controls, the plurality of controls including multiple types of controls, each control of the plurality of controls having a state and a control data structure, wherein each control data structure corresponds to one control, and wherein the state of [[the]] each control includes a data state and a view state;

for each control in the plurality of controls, storing the state of the control as a first state for the control in the control data structure corresponding to the control;

receiving first user input comprising a first change to the state of a first control in the plurality of controls;

updating the state of the first control based on the first user input;

storing the updated state of the first control as a second state for the first control in the control data structure corresponding to the first control;

receiving second input from the user comprising a second change to the state of a second control in the plurality of controls;

updating the state of the second control based on the second user input;

storing the updated state of the second control as a second state for the second control in the control data structure corresponding to the second control;

receiving third user input comprising a request to undo the first change to the first control;

determining whether the first change affects the data state of the first control;

determining whether the first change affects the view state of the first control;

restoring the state of the first control to reflect the first state for the first control without affecting the state of the second control;

transmitting the restored state of the first control to a server; and

clearing the stored first state for the first control and the stored second state for the first control from the control data structure corresponding to the first control without affecting the control data structure corresponding to the second control.

2. (Previously Presented) The computer program product of claim 1, wherein the multiple types of controls include one or more of a text field control type, a radio button control type, a table control type, a tray control type, and a menu control type.

3. (Currently Amended) The computer program product of claim 1, wherein the operations further comprise:

restoring the state of the first control only if the first change affects the data state of the first control.

4. (Currently Amended) The computer program product of claim 1, wherein the operations further comprise:

receiving fourth user input comprising a request to redo the first change to the first control; and

restoring the state of the first control to reflect the second state for the first control.

5. (Currently Amended) The computer program product of claim 1, wherein the third user input comprising the request to undo the first change is received while focus is not on the first control.

6. (Currently Amended) The computer program product of claim 1, wherein restoring the state of the first control includes restoring a state of another control that shares data with the first control.

7-8. (Canceled).

9. (Currently amended) A computer program product, tangibly embodied on a machine-readable storage device, the computer program product comprising instructions operable to cause data processing apparatus to perform operations comprising:

generating a plurality of data structures that store application data and associations between the application data and a plurality of application controls, wherein each application control of the plurality of application controls has a state and a control data structure, wherein each control data structure corresponds to one application control of the plurality of application controls, wherein the state of each application control of the plurality of application controls includes a data state and a view state, and wherein each application control of the plurality of application controls is rendered based on the application data;

detecting that ~~at least one~~ a first application control of the plurality of application controls has changed from a first prior state to a first new state;

determining whether the change affects the data state of the ~~at least one~~ first application control;

determining whether the change affects the view state of the ~~at least one~~ first application control;

recording, for the first application control, the first prior state of the ~~at least one~~ first application control in the corresponding data structure;

updating, for the first application control, the corresponding ~~at least one~~ data structure of the plurality of data structures based on the first new state;

detecting that a second application control of the plurality of application controls has changed from a second prior state to a second new state;

recording, for the second application control, the second prior state of the second application control in the corresponding data structure;

updating, for the second application control, the corresponding data structure of the plurality of data structures based on the second new state;

receiving user input requesting that an undo operation be performed on the first application control;

performing the undo operation by restoring the ~~at least one~~ first application control to the first prior state without affecting the state of the second application control;

updating, for the first application control, the corresponding ~~at least one~~ data structure of the plurality of data structures based on the first prior state;

transmitting the restored first prior state of the first application control to a server; and

clearing, for the first application control, the stored application data in the corresponding ~~at least one~~ data structure of the plurality of data structures without affecting the data structure corresponding to the second application control.

10. (Currently Amended) The computer program product of claim 9, wherein [[the]] at least one data structure of the plurality of data structures is at least one data tree.

11. (Currently Amended) The computer program product of claim 9, wherein [[the]] at least one data structure of the plurality of data structures is stored on a client device.

12. (Previously Presented) The computer program product of claim 9, wherein the plurality of application controls include multiple types of controls.

13. (Previously Presented) The computer program product of claim 9, wherein the associations between the application data and the plurality of application controls are defined by metadata.

14. (Currently amended) An apparatus comprising:

means for displaying a user interface in a client program, the user interface having a plurality of controls, the plurality of controls including multiple types of controls, each control having a state and a control data structure, wherein each control data structure corresponds to one control, and wherein the state of the control includes a data state and a view state;

means for~~, for each control in the plurality of controls,~~ storing the state of [[the]] a first control as a first state for the first control in [[the]] a first control data structure;

means for receiving first user input comprising a first change to the state of [[a]] the first control in the plurality of controls;

means for updating the state of the first control based on the first user input;

means for storing the updated state of the first control as a second state for the first control in the first control data structure;

means for receiving second input from the user comprising a second change to the state of a second control;

means for updating the state of the second control based on the second user input;

means for storing the updated state of the second control as a second state for the second control in a second control data structure;

means for receiving third user input comprising a request to undo the first change;

means for determining whether the first change affects the data state of the first control;

means for determining whether the first change affects the view state of the first control;

means for restoring the state of the first control to reflect the first state for the first control without affecting the state of the second control;

means for transmitting the restored state of the first control to a server; and

means for clearing the stored first state for the first control and the stored second state for the first control from the first control data structure corresponding to the first control without affecting the second control data structure corresponding to the second control.